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MATTHEW R. KINLOCH
Glenelg High School

THOMAS W. CRONIN
University of Maryland at Baltimore County

GLENN H. OLSEN
USGS Patuxent Wildlife Research Center

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HEAD STABILIZATION IN WHOOPING CRANES

MATTHEW R. KINLOCH, Glenelg High School, Science Department, 14025 Burnt Woods Rd, Glenelg, MD 21737 USA and Dept of Biological Sciences, University of Maryland at Baltimore County, Baltimore, MD 21250 USA
THOMAS W. CRONIN, Dept of Biological Sciences, University of Maryland at Baltimore County, Baltimore, MD 21250 USA
GLENN H. OLSEN, USGS Patuxent Wildlife Research Center, 11410 American -Holly Drive, Laurel MD 20708 USA

Abstract: The whooping crane *(Grus americana*) is the tallest bird in North America, yet not much is known about its visual ecology. How these birds overcome their unusual height to identify, locate, track, and capture prey items is not well understood. There have been many studies on head and eye stabilization in large wading birds (herons and egrets), but the pattern of head movement and stabilization during foraging is unclear. Patterns of head movement and stabilization during walking were examined in whooping cranes at Patuxent Wildlife Research Center, Laurel, Maryland USA. Four whooping cranes (1 male and 3 females) were videotaped for this study. All birds were already acclimated to the presence of people and to food rewards. Whooping cranes were video taped using both digital and Hi-8 Sony video cameras (Sony Corporation, 7-35 Kitashinagawa, 6-Chome, Shinagawa-ku, Tokyo, Japan), placed on a tripod and set at bird height in the cranes' home pens. The cranes were videotaped repeatedly, at different locations in the pens and while walking (or running) at different speeds. Rewards (meal worms, smelt, crickets and corn) were used to entice the cranes to walk across the camera's view plane. The resulting videotape was analyzed at the University of Maryland at Baltimore County. Briefly, we used a computerized reduced graphic model of a crane superimposed over each frame of analyzed tape segments by means of a custom written program (T. W. Cronin, using C++) with the ability to combine video and computer graphic input. The speed of the birds in analyzed segments ranged from 0.30 m/s to 2.64 m/s, and the proportion of time the head was stabilized ranged from 79% to 0%, respectively. The speed at which the proportion reached 0% was 1.83 m/s. The analyses suggest that the proportion of time the head is stable decreases as speed of the bird increases. In all cases, birds were able to reach their target prey with little difficulty. Thus when cranes are walking searching for food, they walk at a speed that permits them to keep their heads still and visual field immobile at least half the time.

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Key words: *Grus americana*, whooping crane, visual ecology, head stabilization, eye stabilization